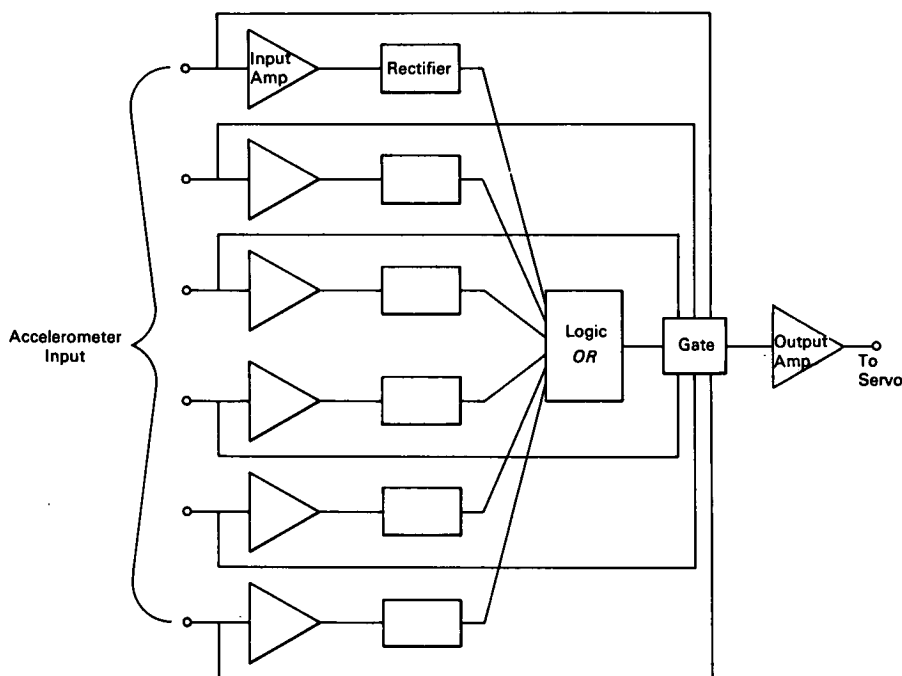


NASA TECH BRIEF



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Instrument Automatically Selects Peak Acceleration Signal from Several Accelerometers



SIX-CHANNEL ACCELEROMETER SELECTOR

The problem:

To design an instrument that will automatically select the peak acceleration signal from several accelerometers used in vibration testing of large structures. The instrument must serve as a peak detector that retains the frequency information inherent in the peak signals. Conventional peak detectors do not retain all of the frequency information in these signals.

The solution:

A solid state circuit that selects the highest of several (six shown in block diagram) ac accelerometer

signals and gates this signal to an output amplifier, preserving all the frequency information in the peak signal. If the amplitudes of the accelerometer signals change with time, the circuit will continually switch to the highest signal, rejecting the smaller signals.

How it's done:

The ac accelerometer signals, direct coupled to dc input amplifiers, are amplified and then rectified to produce dc voltages proportional to the accelerometer input signals. These dc voltages are coupled to a logic or circuit, which controls the gate. Only the

(continued overleaf)

peak signal that has the highest instantaneous dc value is gated to the output amplifier, which provides either gain or attenuation and isolation. The signal from this amplifier is fed to a standard servo system which controls the vibration levels applied to the accelerometers mounted on the test structure.

Notes:

1. Several multichannel selectors can be connected in such a manner that the output from each additional selector is fed into any one of the channels of the next selector. The output amplifiers would be set for unity gain.

2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B66-10462

Patent status:

No patent action is contemplated by NASA.

Source: Carl P. Chapman
(JPL-816)